

## SOLOMON RIVER BASIN TOTAL MAXIMUM DAILY LOAD

**Water Body: Lower South Fork Solomon River**

**Water Quality Impairment: Biology**

**Subbasin:** Lower South Fork Solomon

**Counties:** Osborne, Rooks, and Smith

**HUC 8:** 10260014      **HUC 11 (14):** **010** (010, 020, 030, 040, 050, 060) (Figure 1)  
**020** (010, 020, 030, 040, 050, 060, 070)  
**030** (010, 020, 030, 040, 050, 060, 070)  
**040** (010)

**Ecoregion:** Central Great Plains, Rolling Plains and Breaks (27b)

**Drainage Area:** Approximately 841 square miles.

**Main Stem Segment:** WQLS: 2, 3, 4, 5, 6, and 7; starting at biological monitoring station 543 (South Fork Solomon River below Osborne), traveling upstream, and ending at the Webster Lake Dam

**Designated Uses:** Primary and Secondary Contact Recreation; Expected Aquatic Life Support; Domestic Water Supply; Food Procurement; Groundwater Recharge; Industrial Water Supply; Irrigation Use; Livestock Watering Use

**2002 303(d) Listing:** Solomon River Basin Streams

**Impaired Use:** Aquatic Life Support on Main Stem Segments.

**Water Quality Standard:** General-- Narrative: Surface water shall be free, at all times, from the harmful effects of substances that originate from artificial sources of pollution and that produce any public hazard, nuisance condition or impairment of a designated use. (KAR 28-16-28e(b)(1)).

## 2. CURRENT WATER QUALITY CONDITION AND DESIRED ENDPOINT

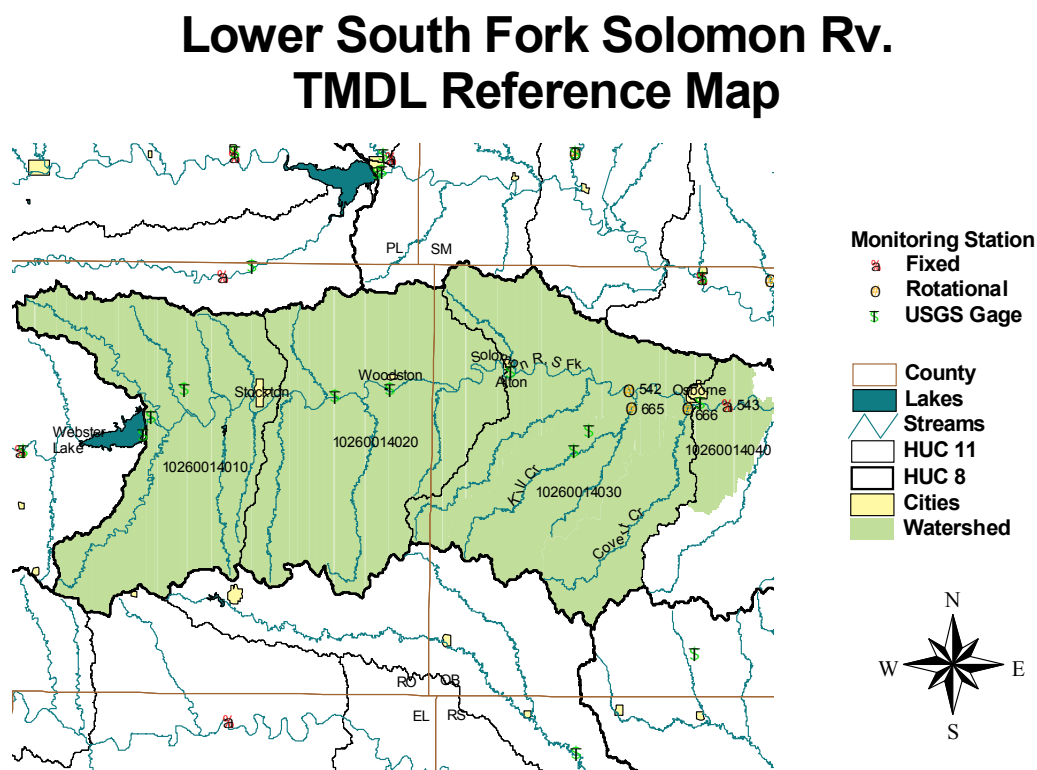
**Stream Biology Monitoring Site:** Station 543 below Osborne (South Fork Solomon River)  
**Period of Record Used:** 1982 - 2001

**Stream Chemistry Monitoring Site:** Station 542 above Osborne (South Fork Solomon River)  
**Period of Record Used:** 1990 - 1998

**Stream Chemistry Monitoring Site:** Station 543 below Osborne (South Fork Solomon River)  
**Period of Record Used:** 1990 - 2002

**Flow Record:** South Fork Solomon River at Osborne, KS (USGS Gage 06874000)

**Figure 1**



### **Current Conditions:**

Three main parameters (MBI, KBI, and %EPT) were analyzed to address the biology impairment. The Macroinvertebrate Biotic Index rates the nutrient and oxygen demanding pollution tolerance of large taxonomic groups (order and family). Higher values indicate greater pollution tolerances. Along with the number of individuals within a rated group, a single index value is computed which characterizes the overall tolerance of the community. The higher the index values the more tolerant the community is of organic pollution exerting oxygen demands in the stream setting. Index values greater than 5.4 are indicative of non-support of the aquatic life use; values between 4.51 and 5.39 are indicative of partial support and values at or below 4.5 indicate full support of the aquatic life use. The Kansas Biotic Index (KBI) is similar to the MBI in that it indicates the impact of nutrient and oxygen demanding pollutants.

The EPT index is the proportion of aquatic taxa present within a stream belonging to pollution intolerant orders: Ephemeroptera, Plecoptera and Trichoptera (mayflies, stoneflies and caddisflies). Higher percentages of total taxa comprising these three groups indicate less pollutant stress and better water quality.

On this stream segment, over the period of record, the average MBI value of 4.54 (range: 3.78 - 5.56) indicates that aquatic life support is partially impaired (MBI between 4.51 and 5.39). Forty-seven percent of the surveys resulted in MBI values over 4.5; the rest were less than 4.5, indicative of full support of aquatic life. Average MBI under partial support conditions was 4.91; average MBI under full support conditions was 4.21. Under partial support conditions, the KBI averages 2.55; the KBI is 2.61 when the conditions are fully supporting. When aquatic life is partially impaired, the percentage of EPT count ranges from 19 - 55% (32% average). Under full support conditions, the percentage averages 67%.

There appears to be a direct link between elevated levels of probable pollutants and MBI scores indicating partial or full impairment. Biochemical oxygen demand (BOD), total phosphorus (TP) and total suspended solids (TSS) were significantly different under full support versus partial or non-support conditions. The difference in chloride concentrations was significant. However, the concentrations fall well below the water quality standard of 250 mg/L. For the other parameters, ambient stream conditions bracketing the biological sampling period are not significantly different when full support or impairment is indicated. Relations between the MBI and the various parameters are displayed in the Appendix.

Average Concentrations under Different Aquatic Life Support Conditions, 1990 - 2001

MBI	No.	EPT	KBI	NH <sub>3</sub>	TSS	BOD	DO	NO <sub>3</sub>	TP	pH	Temp	F	Cl	SO <sub>4</sub>	TDS
Fully Supporting ALS (MBI ≤ 4.5)	10	69%	2.60	0.065 mg/l	81.8 mg/L	2.5 mg/L	8.1 mg/L	1.60 mg/l	0.209 mg/l	7.95	15.4 °C	0.33 mg/L	120 mg/l	318 mg/l	922 mg/l
Partial or No Support of ALS (MBI > 4.5)	2	55%	2.87	0.075 mg/l	156.5 mg/L	6.5 mg/L	8.7 mg/L	1.06 mg/l	0.347 mg/l	7.95	13.0 °C	0.33 mg/L	149 mg/l	338 mg/l	1,012 mg/l

Biological index values and average nutrient and sediment concentrations were compared for the biological monitoring stations located in the Solomon Basin. Overall, the average concentrations of nutrients and sediment at these sampling sites tend to be similar.

Comparison of Biological Index Values and Average Nutrient and Sediment Concentrations

Station	MBI	KBI	%EPT	BOD	TP	TSS
SB014 North Fork Solomon River at Portis	4.47	2.76	57	3.6 mg/L	0.397 mg/L	164 mg/L
SB266 Solomon River at Niles	4.14	2.58	54	4.1 mg/L	0.394 mg/L	276 mg/L
SB543 South Fork Solomon River below Osborne	4.54	2.72	53	3.2 mg/L	0.242 mg/L	147 mg/L

### **Desired Endpoints of Water Quality at Site 543 over 2008 - 2012:**

The use of biological indices allows assessment of the cumulative impacts of dynamic water quality on aquatic communities present within the stream. As such, these index values serve as a baseline of biological health of the stream. Sampling occurs during open water seasons (April to November) within the aquatic stage of the life cycle of the macroinvertebrates. As such there is no described seasonal variation of the desired endpoint of this TMDL. The endpoint would be average MBI values of 4.5 or less over 2008-2012.

Achievement of this endpoint would be indicative of full support of the aquatic life use in the stream reach. There is some linkage between MBI values and biochemical oxygen demand, total phosphorus and total suspended solid concentrations. This TMDL will be phased, concentrating on lowering total phosphorus, biochemical oxygen demand, and total suspended solids levels below their average, while assessing other causes for the sporadic impairment seen in the macroinvertebrate community.

Current Condition (1990 - 2001 data) and Reductions for Lower South Fork Solomon River

<b>Parameter</b>	<b>Current Condition</b>	<b>TMDL</b>	<b>Percent Reduction</b>
Biochemical Oxygen Demand (mg/L)	6.5	2.5	62 %
Total Phosphorus (mg/L)	0.347	0.209	40 %
Total Suspended Solids (mg/L)	156.5	81.8	48 %
Macroinvertebrate Biotic Index	4.74	4.50	5 %
EPT Count (%)	55	69	25 % Increase

### **3. SOURCE INVENTORY AND ASSESSMENT**

**NPDES:** Five permitted waste treatment facilities are located within the watershed (Figure 2). Three are non-overflowing lagoons that are prohibited from discharging and only contribute BOD, TSS, and ammonia load under extreme precipitation events (flow durations exceeded under 5 percent of the time). Such events would not occur at a frequency or for a duration sufficient to cause an impairment in the watershed. According to projections of future water use and resulting wastewater, the non-overflowing lagoons look to have sufficient treatment capacity available.

The point source contribution is derived from monitoring data from the waste treatment plants and other point source pollution contributors. When effluent discharge data is not available, the following concentrations are used to calculate the waste load allocations for waste treatment plant lagoons and municipal mechanical plants:

### Average Concentration in Municipal Facilities that Meet Baseline Design

Facility Type	Total Phosphorus
Waste Treatment Plant Lagoon	2.0 mg/L
Mechanical Plant – Trickling Filter	3.5 mg/L
Mechanical Plant – Activated Sludge only fully nitrify	3.5 mg/L
Mechanical Plant – Activated Sludge fully nitrify and de-nitrify	3.5 mg/L

**Figure 2**

## Lower South Fork Solomon Rv. NPDES Sites



### Waste Treatment Plants in the Lower South Fork Solomon River Watershed

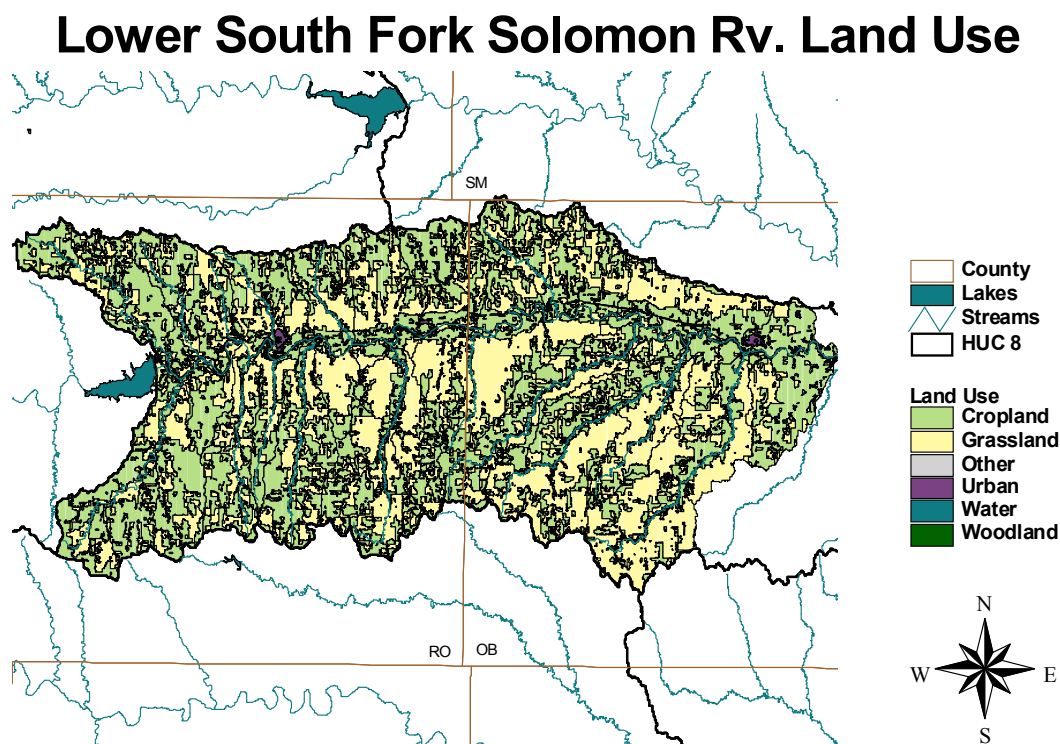
Kansas Permit Number	Name	Type	Design Capacity (MGD)	TP Wasteload Allocation
I-SO41-NO02	STOCKTON INDUSTRIAL PARK	two wastewater systems	non-overflowing	0 lb/day
M-SO02-NO01	ALTON MWTP	Three-cell lagoon	non-overflowing	0 lb/day
M-SO29-OO02	OSBORNE MWTP	Four-cell Lagoon	0.286	4.78 lb/day
M-SO41-OO01	STOCKTON MWTP	Activated Sludge	0.275	8.04 lb/day
M-SO43-NO01	WOODSTON MWTP	Three-cell lagoon	non-overflowing	0 lb/day
		<b>Total</b>	0.561	12.82 lb/day

Osborne and Stockton MWTP have permit limits for BOD and TSS. Osborne MWTP did not discharge during 2002 and is permitted to discharge a monthly average of 30 mg/L of BOD and 80 mg/L of TSS. Stockton MWTP has seasonal permit limits for ammonia, discharged 0.18

MGD based on monitoring data from 2002, and is permitted to discharge a monthly average of 30 mg/L of BOD from September to May and 25 mg/L of BOD in June through August and 30 mg/L of TSS. Examination of the discharge monitoring reports indicates no problems in violating permit limits.

**Land Use:** Most of the watershed is grassland (48% of the area), cropland (50%), woodland (1%) or urban use (0.5%). (See Figure 3).

**Figure 3**



**Livestock Waste Management Systems:** Twenty-two operations are registered, certified, or permitted within the watershed (Figure 4). There are 11 beef, 6 swine, and 5 dairy animal feeding operations in the watershed. Two of these facilities are NPDES permitted, non-discharging facilities with 13,000 animal units. All permitted livestock facilities have waste management systems designed to minimize runoff entering their operations or detaining runoff emanating from their areas. Such systems are designed to retain the 25 year, 24 hour rainfall/runoff event, as well as an anticipated two weeks of normal wastewater from their operations. Such a rainfall event typically coincides with stream flows which are exceeded 1-5

percent of the time. Therefore, events of this type, infrequent and of short duration, are not likely to add to chronic impairment of the designated uses of the waters in this watershed.

Requirements for maintaining the water level of the waste lagoons a certain distance below the lagoon berms ensure retention of the runoff from the intense, local storms events. In Osborne County, where many of the facilities are relatively close to the river, such an event would generate 5.1 inches of rain, yielding 4.0 to 4.8 inches of runoff in a day. Permit compliance data was examined, and no evidence of spills was detected. Potential animal units for all facilities in the watershed total 20,012 (active: 19,458 animal units; inactive: 554 animal units). The actual number of animal units on site is variable, but typically less than potential numbers.

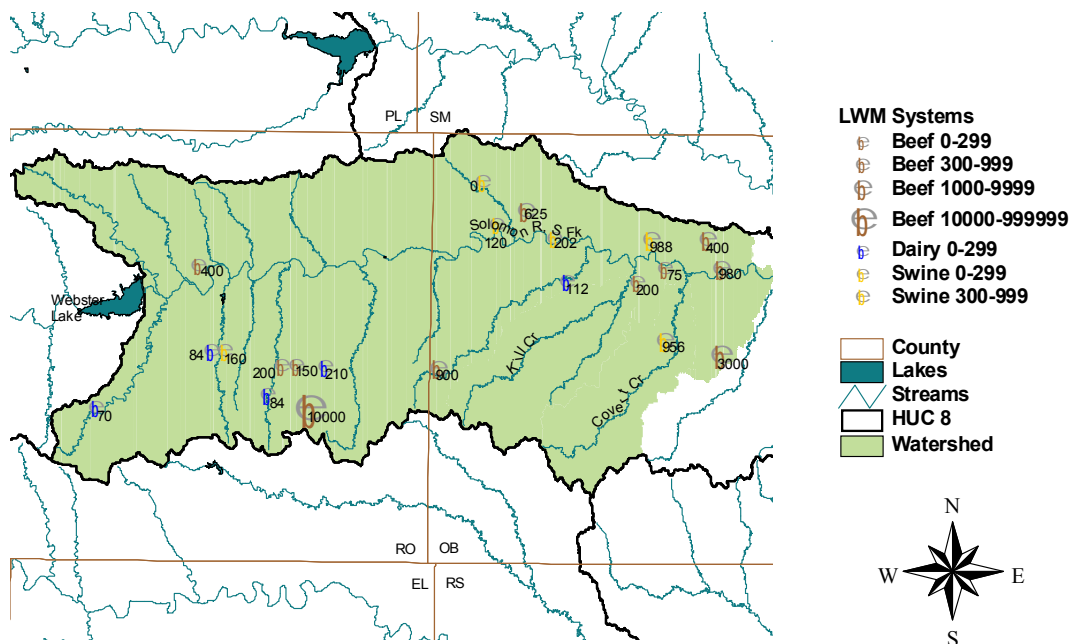
#### Livestock Waste Management Systems in the Watershed

Kansas Permit Number	Livestock Waste Management System	Wasteload Allocation - TP, BOD, and TSS
A-SORO-C001	* Rooks County Feeders LLC	0 lb/day
A-SOOB-C001	R & L Feeders	0 lb/day

\* The facility is not in compliance with the existing permit. Corrective actions are being taken by the KDHE Livestock Management Program.

**Figure 4**

### Lower South Fork Solomon Rv. Livestock Waste Management Systems



**On-site Waste Systems:** Twenty-seven percent of households in Osborne County have septic systems. The population density is low for the watershed area (5.4 people/mi<sup>2</sup>). All of the towns in the watershed anticipate a population decline: -10.1% for Alton, -15.4% for Osborne, -1.3% for Stockton, and -8.6% for Woodston. Kansas Water Office projections estimate population growth in the unincorporated areas of the county to decrease 19% between 2000 and 2020. This population base will likely utilize on-site wastewater systems. However, the number of failing systems will likely diminish through efforts of the Local Environmental Protection Program and by their low volume nature, only such failing systems close to the streams will likely have an impact on ambient stream water quality.

**Contributing Runoff:** The watershed's average soil permeability is 1.3 inches/hour according to NRCS STATSGO database. About 90.3% of the watershed produces runoff even under relatively low (1.5"/hr) potential runoff conditions. Runoff is chiefly generated as infiltration excess with rainfall intensities greater than soil permeabilities. As the watersheds' soil profiles become saturated, excess overland flow is produced. Generally, storms producing less than 0.5"/hr of rain will generate runoff from 4.5% of this watershed, chiefly along the stream channels.

**Background Levels:** One percent of the Lower South Fork Solomon River watershed is woodland. Leaf litter falls into the streams and decomposes increasing the oxygen demand. Background levels of total suspended solids come from geological sources. Sediment becomes suspended during high flow events as soil along the banks is eroded.

#### **4. ALLOCATION OF POLLUTANT REDUCTION RESPONSIBILITY**

There is a direct relation between levels of Total Suspended Solids, Biochemical Oxygen Demand, and Total Phosphorus loading and biological integrity. Decreased loads should result in aquatic communities, indicative of improved water quality. The biological and chemical data for the Lower South Fork Solomon River indicate significant differences of these impairing pollutants under fully supporting versus partially supporting conditions.

Because biological integrity is a function of multiple factors, the initial TMDL goal will be to reduce ambient concentrations of TSS, BOD, and TP at or below the average seen when MBI values lie below the critical value of 4.5, respectively, 81.8 mg/L, 2.5 mg/L and 0.209 mg/L. This goal will apply over the range of flows encountered on the Lower South Fork Solomon River, indicated by the TMDL curves in the Appendix. Future monitoring will be designed to uncover the additional reasons for the impairment, and this TMDL will be adjusted to reflect the new information.

For this phase of the TMDL, an average condition is considered across the seasons, to establish goals of the endpoint and desired reductions. Therefore, average ambient levels are multiplied by the flows estimated for the Lower South Fork Solomon River. This is represented graphically by the integrated area under each load duration curve established by this TMDL. The area is segregated into allocated areas assigned to point sources (WLA) and nonpoint sources (LA).



Future growth in wasteloads should be offset by reductions in the loads contributed by nonpoint sources. This offset along with appropriate limitations should eliminate the impairment.

**Point Sources:** The two point sources potentially contributing impacts to the aquatic community of the river are already performing at a high level of treatment for Biochemical Oxygen Demand and Total Suspended Solids. Wasteload Allocations for total phosphorus for the two discharging municipal facilities have been set in the Waconda Lake Eutrophication TMDL and are outlined on page 4 of this TMDL.

The translation of their existing loads into the ambient loads seen at the monitoring site is unknown and will need to be determined in the future through monitoring of effluent and ambient receiving streamflow. Assuming the total design effluent volume arrives at the monitoring site, that flow (0.87 cfs) would likely influence conditions under the 7Q10. Given that the partial support indications from the MBI tended to occur under flow conditions which were exceeded 99% of the time or more, the allocation for point sources is demarcated by the area under each load duration curve for TP, TSS, and BOD, bounded from 99% to 100%. At this stage of the TMDL, the assumed condition is maintenance of current average conditions during periods of full support at those low flows, presuming some of the offset of lower nonpoint source loading at higher flows.

The Wasteload Allocation represents the load in the stream which the point sources contribute. In most cases, this is a function of permit limits and plant performance; in the case of nutrients and BOD, there are some assimilation and degradation of the constituents in transit while flowing downstream. Further refinement of this allocation will come with information on effluent concentrations and developed nutrient criteria for streams, resulting in specific permit limits in the second stage of this TMDL. As previously noted in the source assessment, non-discharging lagoons of municipal facilities and agricultural livestock waste management systems do not discharge with sufficient frequency or duration to cause an impairment in the Lower South Fork Solomon River watershed. As such those facilities will have a Wasteload Allocation of zero. Typically, if these facilities discharge in the event of an intense rainfall occurrence, the corresponding streamflow from the watershed as a whole will be in the vicinity of the 1-5 percent exceedance and would transport any pollutant load swiftly out of the river system.

**Nonpoint Sources:** Given the runoff characteristics of the watershed, overland runoff can easily carry sediment, BOD, and total phosphorus from the watershed into the stream reaches. The composition of the watershed indicates that rural nonpoint sources which may contribute to the downstream impairment. These sources tend to become dominant under higher flow conditions. Therefore, the area under the load duration curves bounded from 1-99% constitutes the Load Allocation for this TMDL.

**Defined Margin of Safety:** Given the variable nature of the MBI values seen on this stream, additional biological measures are necessary to assure indications of good aquatic community health. Therefore, the defined Margin of Safety for this TMDL will be a proportion of EPT individuals making up at least 67% of the sample population, including ammonia intolerant species, when MBI values are 4.5 or lower. This will ensure that the majority of aquatic

macroinvertebrate population is composed of pollution intolerant taxa. This measure may also correlate with the availability of adequate habitat in the stream to support such a community.

**State Water Plan Implementation Priority:** Because this watershed is impaired by three parameters and possibly by other causes, this TMDL will require additional linkage assessment between sources and impacted stream biological metrics and will be a Medium Priority for implementation, while additional source assessment is done.

**Unified Watershed Assessment Priority Ranking:** This watershed lies within the Lower South Fork Solomon River (HUC 8: 10260014) with a priority ranking of 45 (Medium Priority for restoration).

**Priority HUC 11s:** Nonpoint sources along the eastern half of the watershed will take priority (HUC 11 = 10260014030 and 10260014040).

## **5. IMPLEMENTATION**

### **Desired Implementation Activities**

1. Assess stream stability condition and impairments where organic and sediment deposition has occurred.
2. Maintain necessary conservation tillage and contour farming to minimize cropland erosion.
3. Install necessary grass buffer strips along streams.
4. Reduce activities within riparian areas
5. Evaluate turbidity conditions of biology, sediment, organic matter, and nutrients
6. Implement necessary nutrient management plans to manage manure application to land
7. Monitor wastewater discharges for TSS, TP, and BOD loadings

### **Implementation Programs Guidance**

#### **NPDES - KDHE**

- a. Monitor effluent from wastewater systems to determine their TSS, TP, and BOD contributions and ambient concentrations of receiving streams.
- b. Ensure proper monitoring, permitting, and operations of municipal wastewater systems to limit TSS, TP, and BOD discharges.

#### **Nonpoint Source Pollution Technical Assistance - KDHE**

- a. Support Section 319 demonstration projects for reduction of sediment runoff from agricultural activities.
- b. Provide technical assistance on practices geared to establishment of vegetative buffer strips.
- c. Provide technical assistance on sediment management in vicinity of streams.
- d. Create a Watershed Restoration and Protection Strategy for HUC 10260014.

**Livestock Waste Management - KDHE**

- a. Take corrective actions to ensure that facilities comply with existing permits.

**Water Resource Cost Share & Nonpoint Source Pollution Control Programs - SCC**

- a. Apply conservation farming practices, including terraces and waterways, sediment control basins, and constructed wetlands.
- b. Provide sediment control practices to minimize erosion and sediment

**Riparian Protection Program - SCC**

- a. Establish or reestablish natural riparian systems, including vegetative filter strips and streambank vegetation.
- b. Develop riparian restoration projects
- c. Promote wetland construction to assimilate sediment and organic matter loadings

**Buffer Initiative Program - SCC**

- a. Install grass buffer strips near streams.
- b. Leverage Conservation Reserve Enhancement Program to hold riparian land out of production.

**Stream Channel Assessment and Restoration - SCC and KDHE**

- a. Evaluate stream channel, beds, and banks for stability
- b. Prepare initial recommendations for any channel restoration activity.

**Extension Outreach and Technical Assistance - Kansas State University**

- a. Educate agricultural producers on sediment and pasture management
- b. Provide technical assistance on buffer strip design and minimizing cropland runoff

**Riparian Ecosystem Assessment and Planning - KWO**

- a. Work with the U.S. Army Corps of Engineers to direct stream assessment efforts and basis to aquatic life impacts along main channel of Lower South Fork Solomon River
- b. Incorporate necessary restoration guidance to agencies within Solomon River Basin Plan

**Time Frame for Implementation:** Priority consideration for installing pollution reduction practices within the stream drainage should be made after the year 2008. Evaluation of local water quality improvements in the watershed should occur prior to 2008.

**Targeted Participants:** Primary participants for implementation will be agricultural producers operating within the drainage. Initial work should include an inventory of activities in those areas with greatest potential to impact the stream, including, within a mile of the stream:

1. Total rowcrop acreage
2. Cultivation alongside stream
3. Condition of riparian areas
4. Condition of channel bed and banks

Some inventory of local needs should be conducted in 2003 - 2004 to identify such activities. Such an inventory would be done by local program managers with appropriate assistance by commodity representatives and state program staff in order to direct state assistance programs to the principal activities influencing the quality of the streams in the watershed during the implementation period of this TMDL.

Municipal point sources will initiate monitoring and appropriately treat effluent to reduce any excessive TSS, TP, or BOD. Evaluation of channel conditions will be made over 2004 - 2008 by an interagency stream evaluation team.

**Milestone for 2008:** The year 2008 marks the midpoint of the ten-year implementation window for the watershed. At that point in time, adequate source assessment should be complete which allows an allocation of resources to responsible activities contributing to the sediment impairment. Additionally, biological data from Lower South Fork Solomon River over 2003-2008 should not indicate trends of reduced support of the aquatic community. Average concentration of total suspended solids, BOD, and total phosphorus should be declining to levels commensurate with macroinvertebrate indices showing full support of the aquatic life function.

**Delivery Agents:** The primary delivery agents for program participation will be the conservation districts for programs of the State Conservation Commission and the Natural Resources Conservation Service. Producer outreach and awareness will be delivered by Kansas State Extension and agricultural interest groups such as Kansas Farm Bureau or Kansas Livestock Association, the Kansas Pork Producers Council, and the Kansas Dairy Association. Channel evaluations will be done by personnel of the State Conservation Commission and KDHE.

**Reasonable Assurances:**

**Authorities:** The following authorities may be used to direct activities in the watershed to reduce pollutants.

1. K.S.A. 65-171d empowers the Secretary of KDHE to prevent water pollution and to protect the beneficial uses of the waters of the state through required treatment of sewage and established water quality standards and to require permits by persons having a potential to discharge pollutants into the waters of the state.
2. K.S.A. 2-1915 empowers the State Conservation Commission to develop programs to assist the protection, conservation and management of soil and water resources in the state, including riparian areas.

3. K.S.A. 75-5657 empowers the State Conservation Commission to provide financial assistance for local project work plans developed to control nonpoint source pollution.
4. K.S.A. 82a-901, et seq. empowers the Kansas Water Office to develop a state water plan directing the protection and maintenance of surface water quality for the waters of the state.
5. K.S.A. 82a-951 creates the State Water Plan Fund to finance the implementation of the *Kansas Water Plan*.
6. The *Kansas Water Plan* and the Solomon Basin Plan provide the guidance to state agencies to coordinate programs intent on protecting water quality and to target those programs to geographic areas of the state for high priority in implementation.

**Funding:** The State Water Plan Fund annually generates \$16-18 million and is the primary funding mechanism for implementing water quality protection and pollutant reduction activities in the state through the *Kansas Water Plan*. The state water planning process, overseen by the Kansas Water Office, coordinates and directs programs and funding toward watersheds and water resources of highest priority. Typically, the state allocates at least 50% of the fund to programs supporting water quality protection. This watershed and its TMDL are a **Medium** Priority consideration.

**Effectiveness:** Sediment control has been proven effective through conservation tillage, contour farming and use of grass waterways and buffer strips. The key to success will be widespread utilization of conservation practices within the watersheds cited in this TMDL.

Technology exists for BOD and total phosphorus removal and can be placed in wastewater systems with proper planning and design.

Should participation significantly lag below expectations over the implementation period or monitoring indicates lack of progress in improving water quality conditions from those seen over 1982-2001, the state may employ more stringent conditions on agricultural producers in the watershed through establishment of a Critical Water Quality Management Area in order to meet the desired endpoints expressed in this TMDL.

## 6. MONITORING

At first, KDHE will continue to collect seasonal biological samples from Lower South Fork Solomon River for three years over 2003 - 2008 and an additional three years over 2008-2012 to evaluate achievement of the desired endpoint. Monitoring of TSS, BOD, and total phosphorus content of wastewater discharged from treatment systems will be expected under new and reissued NPDES and state permits, including ambient monitoring above and below the facilities, and tracking contributions of facilities downstream to the monitoring site.

Additional source assessment needs to be conducted and local program management needs to identify its targeted participants of state assistance programs for implementing this TMDL. This information should be collected in 2003-2008 in order to support appropriate implementation projects.

## **7. FEEDBACK**

**Public Meetings:** Public meetings to discuss TMDLs in the Solomon Basin were held January 7 and March 3, 2003 in Stockton. An active Internet Web site was established at <http://www.kdhe.state.ks.us/tmdl/> to convey information to the public on the general establishment of TMDLs and specific TMDLs for the Solomon Basin.

**Public Hearing:** A Public Hearing on the TMDLs of the Solomon Basin was held in Stockton on June 2, 2003.

**Basin Advisory Committee:** The Solomon Basin Advisory Committee met to discuss the TMDLs in the basin on October 3, 2002, January 7, March 3, and June 2, 2003.

**Milestone Evaluation:** In 2008, evaluation will be made as to the amount of water quality improvement activity which has occurred within the watershed and current condition of the Lower South Fork Solomon River. Subsequent decisions will be made regarding the implementation approach and follow up of additional implementation in the watershed.

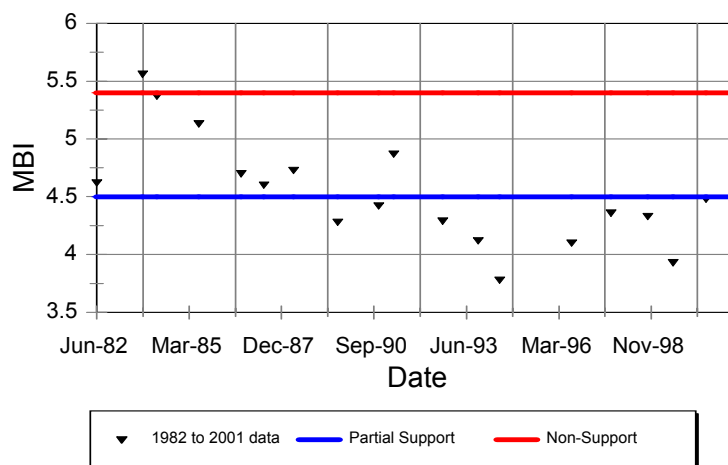
**Consideration for 303(d) Delisting:** The lake will be evaluated for delisting under Section 303(d), based on the monitoring data over the period 2008-2012. Therefore, the decision for delisting will come about in the preparation of the 2012 303(d) list. Should modifications be made to the applicable water quality criteria during the ten-year implementation period, consideration for delisting, desired endpoints of this TMDL and implementation activities may be adjusted accordingly.

**Incorporation into Continuing Planning Process, Water Quality Management Plan and the Kansas Water Planning Process:** Under the current version of the Continuing Planning Process, the next anticipated revision will come in 2004 which will emphasize revision of the Water Quality Management Plan. At that time, incorporation of this TMDL will be made into both documents. Recommendations of this TMDL will be considered in *Kansas Water Plan* implementation decisions under the State Water Planning Process for Fiscal Years 2004-2008.

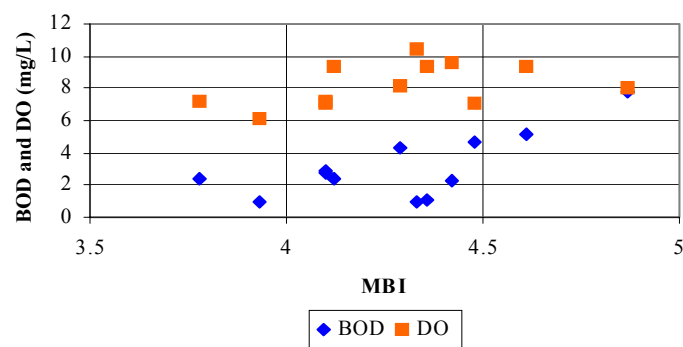
## APPENDIX A

### Lower South Fork Solomon River

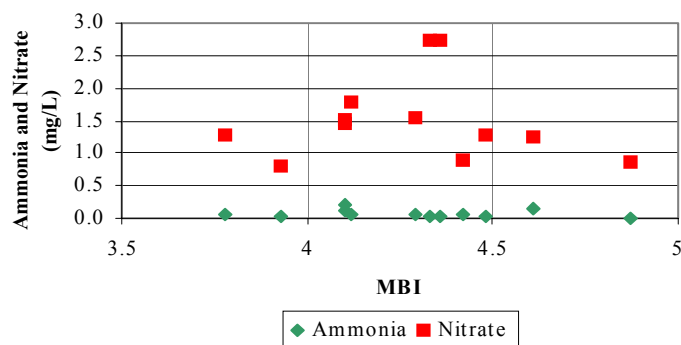
Biology TMDL - Station 543

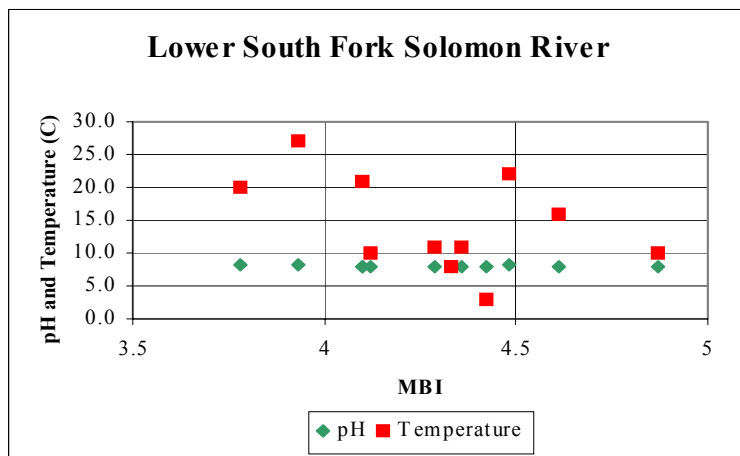
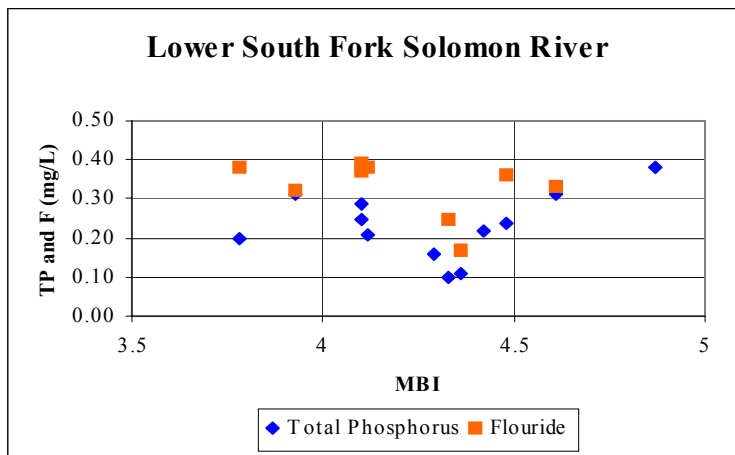
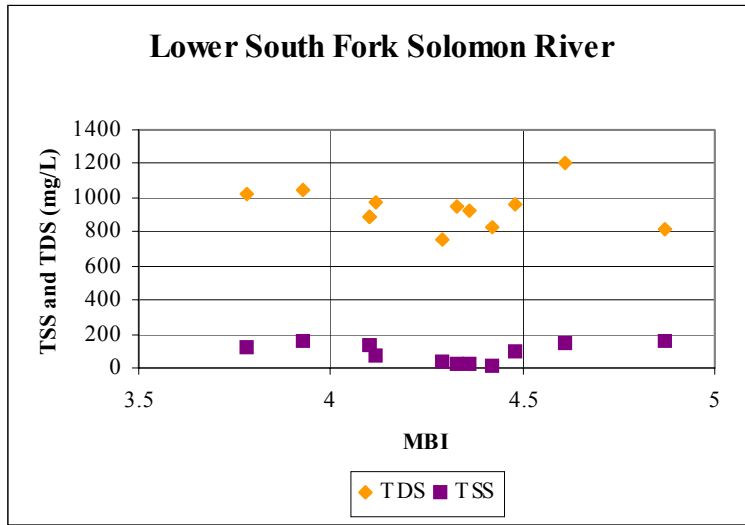


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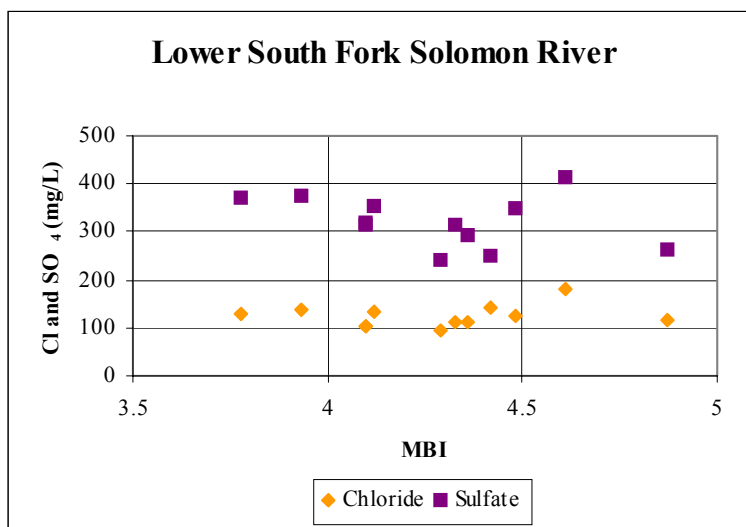


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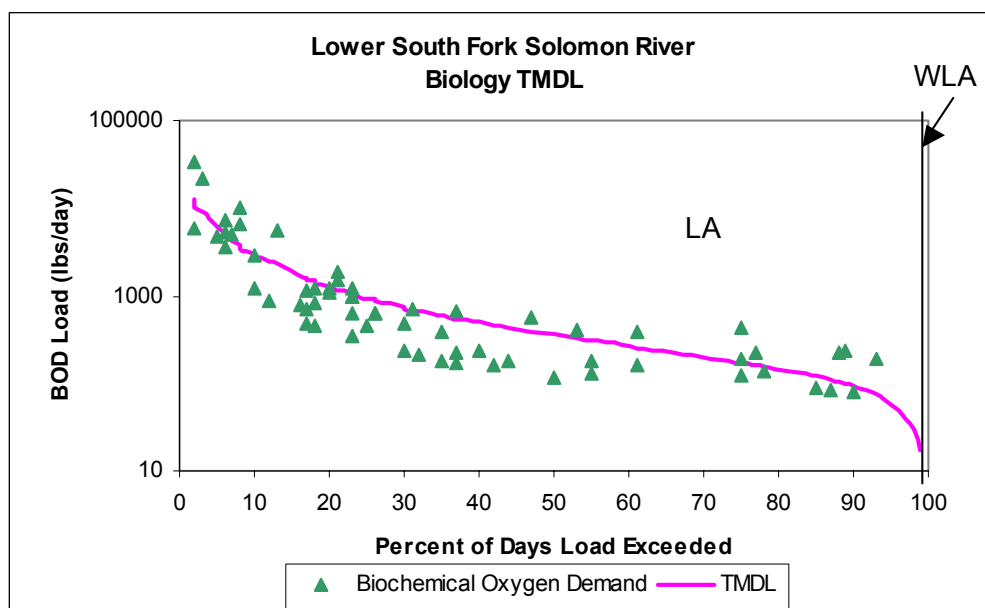


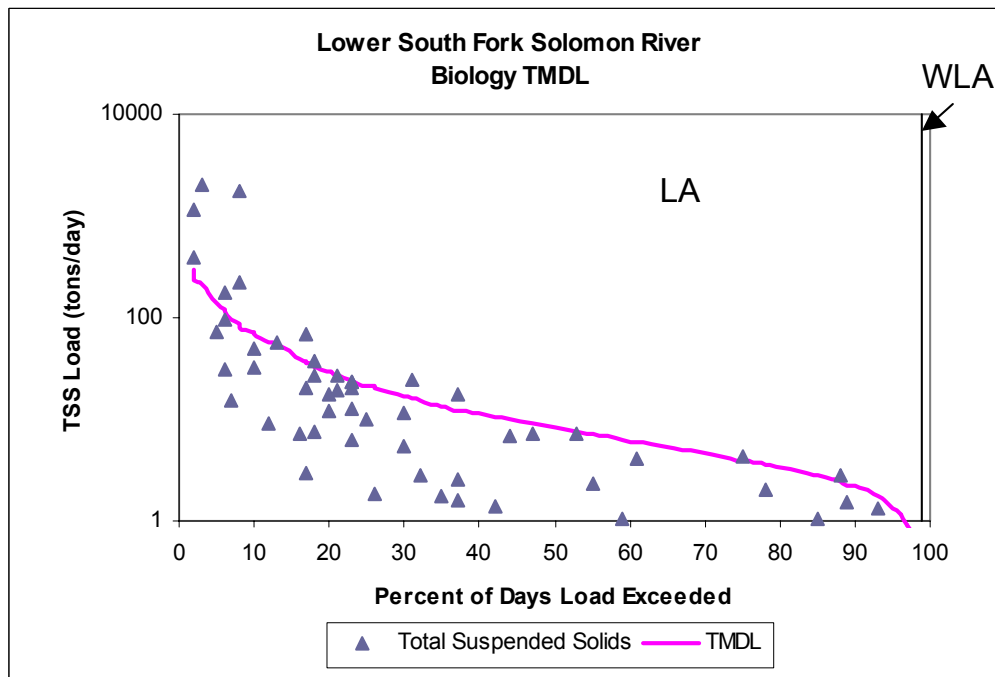
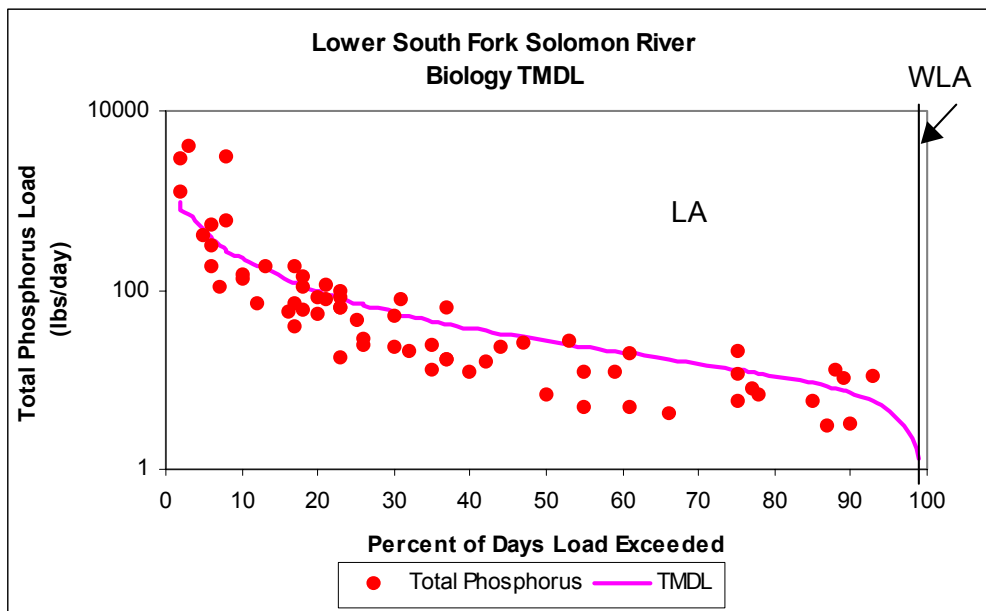






## APPENDIX B





Approved January 21, 2004